

Remarks

Claims 13-17 are pending in the above-identified application. By this Amendment, claims 1-12 and 18-31 have been cancelled and claim 13 has been amended. In addition, the listing of inventors has been amended.

Claim 13 has been amended to recite that: 1) the reaction chamber heating unit heats the reaction chamber rather than "can heat" the reaction chamber; 2) the process gas supplying unit supplies a process gas rather than "can supply" a process gas; and 3) the gas heating unit heats the process gas rather than "can heat" the process gas.

Yutaka Takahashi, Hitoshi Kato, Takeshi Kumagai, Atsushi Tohara and Yoshiyuki Fujita have been deleted from the listing of inventors in the instant application. This Amendment is accompanied by a Request to Change Inventorship under 37 CFR §1.48(b), with the requisite fee. Amendment of the inventorship is respectfully requested.

In the Office Action, the drawings are objected to; claims 13-17 are rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1-12 of U.S. Patent 6,540,509 to Asano et al. ("Asano '509"); claims 13-17 are provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1-25 of copending U.S. Application No. 10/342,261 ("the '261 application"); claims 13-17 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,777,300 to Homma et al. ("Homma"); and claims 13-17 are rejected under 35 U.S.C. §102(f).

In view of the amendments and remarks herein, Applicants respectfully request reconsideration and withdrawal of the rejections set forth in the Office Action.

I. Objection to the Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they are said to not include the reference numeral "131".

Applicants submit herewith a copy of Fig. 6 which shows that the reference numeral "131" is in fact included in the drawing. In the accompanying copy, the reference numeral "131" is circled for the Examiner's convenience.

II. Double Patenting Rejections of Claims 13-17

Claims 13-17 are rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1-12 of Asano '509, and further are provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1-25 of the '261 application.

To overcome the double patenting rejections based on the Asano '509 patent and the '261 application, respectively, Applicants submit herewith a Terminal Disclaimer to Obviate a Double Patenting Rejection Over a Prior Patent and a Terminal Disclaimer to Obviate a Provisional Double Patenting Rejection Over a Pending Second Application. Accordingly, Applicants respectfully request withdrawal of the double patenting rejections.

III. Rejection of Claims 13-17 Under 35 U.S.C. §102(b)

Claims 13-17 are rejected under 35 U.S.C. §102(b) as being anticipated by Homma.

Homma is cited for teaching the claimed invention in the figures and throughout the specification. According to the Office Action, figure 13 of the reference teaches all of the claimed gases. In addition, the Examiner states that the apparatus shown in the other figures in Homma is inherently capable of supplying any desired gas to the reaction chamber.

Applicants respectfully submit that claims 13-17 are not anticipated by Homma.

In Applicants' claimed silicon dioxide film forming system, the process gas contains a compound gas including hydrogen and chlorine and an oxygen gas, and the gas heating unit (provided at the gas supplying unit) heats the process gas to produce water before the process gas is supplied into the reaction chamber. In other words, the water

vapor (i.e., steam) in Applicants' claimed system is produced from a process gas containing (i) a compound gas containing hydrogen and chlorine and (ii) an oxygen gas, and is produced before entry into the reaction chamber. On the other hand, in Homma, the water vapor is not produced from the process gas but from pure water (see Homma at, e.g., col. 18, lines 38-46). In other words, the water vapor in the Homma system is not formed from a process gas containing (i) a compound gas containing hydrogen and chlorine and (ii) an oxygen gas but from pure water. See Homma at, for example, col. 18, lines 38-54. Homma teaches that during the oxidation processing therein, hydrogen chloride gas can be supplied into the reaction tube from a hydrogen chloride reservoir to trap metal atoms passing through the reaction tube wall from, e.g., the heater (see col. 19, lines 24-28). Thus, in Homma, hydrogen chloride is not used to form water vapor but rather is used as a trap for metal ions passing through the reaction tube wall.

Thus, Homma does not teach the steam-generating process gas used in Applicants' claimed system, and, therefore, for at least this reason, does not anticipate instant claims 13-17.

IV. Rejection of Claims 13-17 Under 35 U.S.C. §102(f)

According to the Office Action, claims 13-17 are rejected under 35 U.S.C. §102(f) because the Applicants did not invent the claimed subject matter. The Examiner states that Asano '509 or the '261 application teaches the claimed system.

Asano '509 and the '261 application name the same inventors, as listed below:

- (1) Takanobu Asano
- (2) Katsutoshi Ishii
- (3) Hiroyuki Yamamoto
- (4) George Hoshi
- (5) Kazutoshi Miura.

By the instant Amendment, the listing of inventors has been amended to delete Yutaka Takahashi, Hitoshi Kato, Takeshi Kumagai, Atsushi Tohara and Yoshiyuki Fujita. The inventors for instant claims 13-17 are Katsutoshi Ishii and Kazutoshi Miura. Mr. Ishii

and Mr. Miura are co-inventors in the Asano '509 patent and the '261 application.

Applicants advise that the subject matter described in instant claims 13-17, which also is disclosed in the claims of the Asano '509 patent and the '261 application, resulted from the contributions of Mr. Ishii and Mr. Miura.

In view of the amendment to the listing of inventors, Applicants respectfully request that the §102(f) rejection be withdrawn.

V. Conclusion

In view of the foregoing remarks, Applicants respectfully request that the rejections set forth in the Office Action be withdrawn and that claims 13-17 be allowed.

Respectfully submitted,



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Enclosure: Marked-Up Copy of Figure 6

LISTING OF CLAIMS

Claims 1-12 (cancelled)

Claim 13 (Currently Amended): A silicon dioxide film forming system comprising:

a reaction vessel defining a reaction chamber that can contain an object to be processed having a surface provided with at least a silicon layer;

a reaction chamber heating unit that ~~can heat~~ heats the reaction chamber to a predetermined temperature;

a process gas supplying unit that ~~can supply~~ supplies a process gas into the reaction chamber, the process gas containing a compound gas including hydrogen and chlorine, and oxygen gas; and

a gas heating unit, provided at the gas supplying unit, that ~~can heat~~ heats the process gas to produce water before the process gas is supplied into the reaction chamber.

Claim 14 (Original): A silicon dioxide film forming system according to claim 13, wherein

the reaction chamber can contain a plurality of objects to be processed in a tier-like manner, and

the reaction chamber heating unit has a heater surrounding the reaction chamber.

Claim 15 (Original): A silicon dioxide film forming system according to claim 13,
wherein

the gas heating unit comprises:
a heating vessel defining a heating chamber packed with flow impeding
members, and
a heating element surrounding the heating chamber; and
the heating element includes a resistance heating member and a ceramic
cover sealing the resistance heating member therein.

Claim 16 (Original): A silicon dioxide film forming system according to claim 15,
wherein

the resistance heating member is made of carbon with a high purity.

Claim 17 (Original): A silicon dioxide film forming system according to claim 15,
wherein

the ceramic cover is made of quartz.

Claims 18-31 (cancelled)